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SWEET-POTATO GROWING IN THE COTTON BELT.[1]

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INTRODUCTION.

The sweet potato is one of the most important food crops grown in the South, and the acreage could be greatly increased without reducing the unit value of the crop. Thousands of southern farmers do not have enough sweet potatoes for home use throughout the year, and very few of the small cities and towns in the South have a continuous or sufficient supply. The small cities of the West and Middle West are not supplied with sweet potatoes except for a period of a few weeks during the autumn. With the extension of the modern methods of storage which are being employed in some sections of the South all of these markets could and should be supplied.

The sweet potato is in demand for canning, and thousands of acres could be used for this purpose. Within the past few years there has been a great demand for canned sweet potatoes, and up to the present time this demand has not been satisfied. Canners have contracted for sweet potatoes at 35 to 40 cents a bushel delivered at the canning factory. When the crop is sold to canners the outlay for packages is very small, as the containers are usually returned, and as the sweet potatoes are hauled direct to the factory there is no additional transportation charge.

Besides growing sweet potatoes for human food thousands of acres could be profitably grown for stock-feeding purposes. The quantity that can be used profitably for this purpose is limited only by the number of animals to be fed and the amount of other feeds available. All classes of live stock will eat sweet potatoes, but their greatest

[1] For further information in regard to the cultivation and marketing of sweet potatoes, see Farmers' Bulletin 324, "Sweet Potatoes," and Farmers' Bulletin 548, "Storing and Marketing Sweet Potatoes."

Note.—Intended for farmers in the cotton belt who desire to diversify their farming because of the economic crisis which adversely affects the cotton crop at this time.

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value is as feed for hogs and cattle. Dairy cows can be fed sweet potatoes without danger of injuriously affecting the flavor of the milk.

SOILS.

While sweet potatoes can be grown on almost any type of soil, a sandy or sandy-loam soil gives the best results. The soil should be well drained, but should not be so loose that the plant food will leach away. A soil of medium fertility gives the best results, as very rich soils produce excessive growth of vines at the expense of roots. Cut-over pine lands in the South yield large crops of sweet potatoes when properly fertilized. While new land is desirable, a fair crop can be produced on run-down cotton, tobacco, or corn land, especially when used in a rotation with some leguminous crop for increasing the humus in the soil.

ROTATIONS.

Sweet potatoes should not be grown on the same land year after year, as the soil is liable to become infected with sweet-potato diseases. For some diseases crop rotation in which the sweet potato does not occupy the same land oftener than once in three or four years is the only practical method of control. By planting other crops on the land, the diseases affecting the sweet potato are starved. Continuous cropping with a cultivated crop depletes the humus, so it is important to grow sweet potatoes in rotation with crops which add humus to the soil.

The following is a good three-year rotation:

First year. Early Irish potatoes, followed by sweet potatoes.
Second year. Oats, followed by corn, peas, or peanuts.
Third year. Corn, with cowpeas, peanuts, or velvet beans between the rows.

For a four-year rotation the following might be used:

First year. Sweet potatoes.
Second year. Oats, followed by cowpeas and peanuts.
Third year. Cotton, with bur clover between the rows.
Fourth year. Corn, with cowpeas, soy beans, or peanuts between the rows.

It should be borne in mind that these rotations are merely suggestive and should be modified to suit local conditions. In any system of rotation a soil-improving crop should be turned under once in two or three years. In the rotations suggested the cowpeas and corn stubble should be turned under.

PROPAGATION OF SWEET POTATOES.

Sweet potatoes are propagated by slips, or "draws," and from vine cuttings. If a very early crop is desired slips should be used, but for the general crop vine cuttings are satisfactory and economical.

Where vine cuttings are to be used it is a common practice to bed enough roots to produce sufficient slips for one-sixth to one-tenth of the area to be planted. These slips are set out and when the vines begin to run cuttings are taken for the remainder of the field. Ten bushels of good seed roots will produce enough slips for an acre, and these slips will furnish sufficient vine cuttings to plant 6 to 10 acres more.

Roots for growing slips are usually bedded four to six weeks before the time for planting in the field. For a very early crop the roots should be bedded in either a manure-heated or fire-heated [1] hotbed. Where fresh manure is not available, the fire-heated hotbed is the simplest and cheapest. If steam or hot-water heat is used for any other purpose on the farm a more permanent hotbed can be made and heated either with hot-water or steam pipes. The sweet-potato bed should be located on well-drained soil with a southern exposure and protected from cold winds. In the lower South artificial heat is not necessary for starting plants for the general crop.

In growing sweet-potato plants a light loam or sandy soil should be used for the propagating bed, care being taken to obtain the soil from a field where sweet potatoes have not been grown for several years. Soil from a disease-infested field might contain disease spores which would attack the roots or young plants in the bed and in this way be taken to the field on the plants. Care should also be exercised in selecting seed for propagating purposes. Only roots free from disease should be used for seed, as plants produced from diseased roots are almost certain to be diseased and would be a source of infection in the field.

In bedding sweet potatoes a layer of 4 or 5 inches of loose soil or sand is put in the bed and the roots are placed close together, but not touching. After the roots are placed, a layer of 2 to 3 inches of sand or soil is spread over them. The bed is then thoroughly moistened and covered with cloth, canvas, or hotbed sash. The bed should be watered whenever it is dry, but it should not be kept soaked. It is better to give a good watering once a week than to moisten the surface every day. As soon as the plants push through the soil the bed should be ventilated when the weather will permit. Before planting, the plants should be hardened off, which can be accomplished by leaving the bed uncovered during the day in mild weather. A few days before planting time the beds may be left uncovered during the night when there is no danger of frost. In many sections of the South plants for the late crop are grown in the open. A common practice is to make an excavation 6 to 8 inches deep in a protected place and put in a few inches of sand or soil on

[1] Those desiring information regarding the construction of fire-heated beds will find it in Farmers' Bulletin 324.

which to bed the potatoes. Sometimes the bed is covered with leaves, hay, or straw until the plants begin to break through, when the material is removed.

MANURE AND FERTILIZERS.

Farm manure is a good fertilizer for sweet potatoes, especially on soils deficient in humus; but it is best to apply the manure to the crop preceding the potatoes. Heavy applications of fresh manure a short time before planting cause excessive growth of vines at the expense of the roots and stimulate the growth of weeds.

Commercial fertilizers will produce large yields of sweet potatoes on soils that are supplied with humus. The quantity of fertilizer to apply depends upon the fertility of the soil. On poor, sandy soils 600 to 800 pounds of a complete fertilizer analyzing about 2 per cent nitrogen, 8 per cent phosphoric acid, and 8 to 10 per cent potash should be used. This fertilizer can be secured already mixed or may be mixed at home. When mixed at home the following materials can be used:

1,000 pounds of 16 per cent acid phosphate.
600 pounds of cottonseed meal.
400 pounds of muriate or sulphate of potash.

2,000 pounds.

The above mixture is only suggestive. Other sources of plant food might be used to advantage and the grower should be guided by the price, making due allowance for the difference in the percentage of the fertilizing elements present. Where crops of cowpeas, soy beans, peanuts, or velvet beans have been turned under, most of the nitrogen could be left out of the mixture. A fertilizer that produces a good yield of cotton or corn will usually be found satisfactory for sweet potatoes. The fertilizer may be applied broadcast and harrowed in or sown in a furrow and well mixed with the soil by running a bull-tongue or single-shovel plow in the row. The most common practice is to sow the fertilizer in a furrow and bed over it.

PREPARATION OF THE SOIL.

The soil for sweet potatoes should be thoroughly prepared before planting. The depth of plowing has a considerable influence on the shape of the potatoes. A deep soil causes the roots to grow long and slender, while a very shallow soil produces short, thick potatoes. A soil of medium depth (5 to 6 inches) produces the type of sweet potatoes in most demand on the market. After plowing, the soil should be well pulverized and then allowed to lie several days before planting. When sweet potatoes are planted on ridges the soil is

thrown up by turning two or four furrows together and leveling off with a light drag or board. The ridges should be as low as the lay of the land will allow. Where the soil is well drained, low, flat beds will give better results than high ridges.

PLANTING.

The plants are ready for setting in the field when three or four leaves and a good root system have developed. Before pulling the plants, the bed should be thoroughly watered. In pulling, one hand should be used to hold the potato in place while the plants are pulled loose with the other. The plants should be covered with wet burlap or some other material to prevent their drying while being taken to the field and planted.

Sweet-potato plants are set by hand or with a transplanting machine. When planting by hand, a hole is made with the hand, a sharpened stick, a dibble, or a trowel. The plant is placed in the hole and the soil firmly packed around the roots. When the soil is dry, a small quantity of water should be poured into the hole, to assist in setting the soil around the roots. After the water soaks into the soil the filling of the hole should be completed. The transplanting machine makes the opening for the plant, applies the water, and compacts the soil around the roots all at one operation.

The distance for setting plants depends upon the variety of sweet potato grown. The usual distance is 14 to 18 inches apart in rows $3\frac{1}{2}$ to 4 feet apart. The number of plants required for an acre varies from 8,000 to 12,000.

Where vine cuttings are used it is the usual practice to plant after a rain while the soil is wet. The vine is dropped where it is to be planted, and a notched stick, which prevents crushing the cutting, is used to force it into the soil.

CULTIVATION.

Sweet potatoes should be given clean cultivation until the vines cover the space between the rows. The first cultivation should be given soon after the plants are set, as the planting operation packs the soil to some extent. Later cultivation should be given after each rain, to break the crust and to keep a good surface mulch. Hand hoeing will be necessary to keep the soil loose between the plants in the row and to keep down weeds. When the vines begin to interfere, a final cultivation should be given. At this cultivation the vines should be turned into alternate rows by means of a stick, and after the soil has been cultivated the vines should be turned back and allowed to take possession of the land. Large weeds should be pulled by hand after the last cultivation.

HARVESTING.

Sweet potatoes grown for early markets may be harvested as soon as they reach sufficient size. Late crops should be harvested before a heavy frost is expected or as soon as possible after a frost kills the vines. When the vines are killed and it is impossible to dig the potatoes at once, the vines should be removed in order to prevent decay from going down into the hill of potatoes. If a heavy freeze is expected loose soil should be thrown over the row.

Sweet potatoes may be dug with a spading fork, a plow, or a digger made for the purpose. Where a small crop is to be dug a spading fork is satisfactory, but for a large crop a plow or digger should be used. In using a turnplow the moldboard should be removed, to prevent covering the potatoes as they are thrown out. A rolling colter attached to the beam of the plow or digger for cutting the vines will be found advantageous. Great care should be exercised in digging and handling sweet potatoes to prevent bruising them, as a bruised potato is more liable to rot than one not injured.

After the potatoes are dug they should be left exposed to the air for two or three hours, or until the soil falls off in handling. They should not be left exposed to the sun very long and should not be left out over night. When dry the potatoes should be picked up and placed in harvesting crates or baskets. These crates or baskets should be padded to prevent bruising the potatoes. It is best to pick up the marketable potatoes first and then go over the field and pick up the culls and small roots. Seed potatoes should be selected at digging time and should be stored separately.

Sweet potatoes which are to be kept for winter use should be hauled direct from the field to the storage house or storage pit. They will keep better in a storage house than in a pit, as the temperature and humidity in the house can be controlled. The storage house should be so built that the temperature can be kept quite uniform and good ventilation secured. As soon as the potatoes are put in the house they should undergo a curing or drying process. This drying or curing is accomplished by heat and by thorough ventilation. The temperature of the house should be held at 80° or 90° F. for a period of 10 days or two weeks, or until the potatoes are dry; but the house must be provided with vents to carry off the moisture. After the potatoes are cured the temperature should be reduced gradually until it reaches 55° F. and kept as near that point as practicable throughout the storage period. When the temperature goes below 48° or 50° F. the house should be opened during the warm part of the day or a fire started in the house. When the temperature goes above 60° F. the house should be opened when the outside air is cooler than the interior of the house. The house should be ventilated on bright days,

but kept closed on cloudy or rainy days. The potatoes in the house should not be handled until they are needed for market, as handling injures them and makes them more susceptible to diseases. Even when the potatoes begin to decay it is not advisable to sort them, as this extra handling spreads the disease.

Sweet potatoes, to bring a good price on the market, should be carefully graded and put up in neat, attractive packages of standard sizes. The packages most generally used are the half-bushel and bushel hamper, veneer barrel, stave barrel, and bushel box. Bags should never be used, as the potatoes become badly bruised when handled in this way. The market demands a medium-sized uniform type of sweet potato, free from bruises or decayed spots. In grading, the large, overgrown, and the crooked, broken, and bruised roots should be kept at home for feeding or for canning. The best potatoes will bring a higher price when separated from the culls.

For a more complete discussion of sweet-potato storage and marketing, including the construction and management of the storage house, read Farmers' Bulletin 548, "Storing and Marketing Sweet Potatoes."

VARIETIES.

The best variety of sweet potatoes to grow depends upon the use to be made of the product. For home use the variety or varieties preferred by the family should be grown. When growing sweet potatoes for market, the varieties which are preferred in the region where they are to be sold should be planted. Southern markets prefer a moist-fleshed potato, while the northern and eastern markets prefer a dry potato. It is much safer and cheaper to grow varieties the markets want than to try to educate the consumers to eat what a grower thinks is a better variety. For stock-feeding purposes heavy-yielding varieties, such as Southern Queen and Red Bermuda, should be grown. The table varieties desired on the southern markets are Nancy Hall, Dooley, Pumpkin Yam, Southern Queen, Bunch Yam, and Yellow Yam. The varieties suggested for the northern market are Big-Stem Jersey, Yellow Jersey, Improved Jersey, Red Jersey, and Triumph. The Triumph is one of the earliest varieties and is recommended where sweet potatoes are grown in the South as an early crop for northern markets. The Nancy Hall and the Jersey varieties seem to be more susceptible to the disease known as stem-rot than the other varieties mentioned.

SWEET POTATOES FOR LIVE STOCK.

The value of the sweet potato for feeding to live stock is not appreciated by most farmers. Three to four bushels of sweet potatoes are equal to a bushel of corn for hogs, and when fed in connec-

tion with cottonseed meal, peanuts, or other concentrates they provide a good ration for both cattle and hogs. All classes of live stock need some succulent food during the winter, and the sweet potato can be used for this purpose to good advantage. On light soil that will produce 20 to 25 bushels of corn to the acre, 100 to 150 bushels of sweet potatoes can be grown with the same care and attention. Some farmers who grow sweet potatoes for market estimate that the vines and culls left after harvest are worth $5 to $6 an acre for hog-feeding purposes.

When sweet potatoes are grown for hogs in sections where hard freezes do not occur the hogs are allowed to root out the potatoes as they want them. In other regions the potatoes should be dug and stored for winter use. When sweet potatoes are grown for market the culls should be used for feeding. Many commercial growers keep hogs for the purpose of disposing of their cull potatoes at a profit.

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